

MINERALS IN THE HUMAN BODY
Crystal chemistry of cement-asbestos†

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ABSTRACT

A study of a representative number of cement-asbestos (CA) samples removed from different localities in Italy has been accomplished with a combination of analytical techniques, including XRF, XRPD, SEM/EDS, micro-Raman, and electron backscattered diffraction (EBSD), to elucidate the mineralogical and chemical variability of this class of building materials on a large scale. We describe a complex mineralogy including phases of cement hydration, residual non-hydrated components, and a relevant fraction attributed to various processes of deterioration. With the aid of the CaO-MgO-SiO₂ compositional diagram, three groups of CAs have been identified on the basis of their chemical parameters. This result is important for environmental and waste management issues.

Keywords: Cement-asbestos, Rietveld method, CaO-MgO-SiO₂, carbonation, SEM, EBSD